

Elk River TMDL Development Update and Overview of the Draft Upper Elk River Sediment Source Analysis

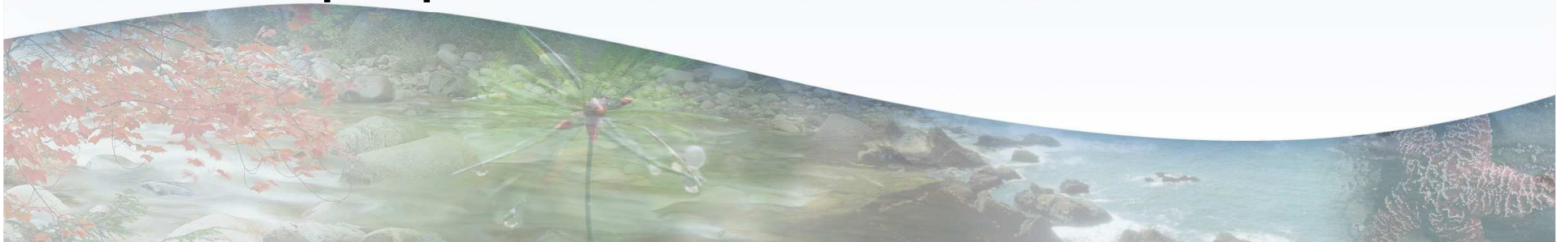
June 28, 2011
Eureka, CA

Adona White, PE
Basin Planning Unit



Meeting Agenda

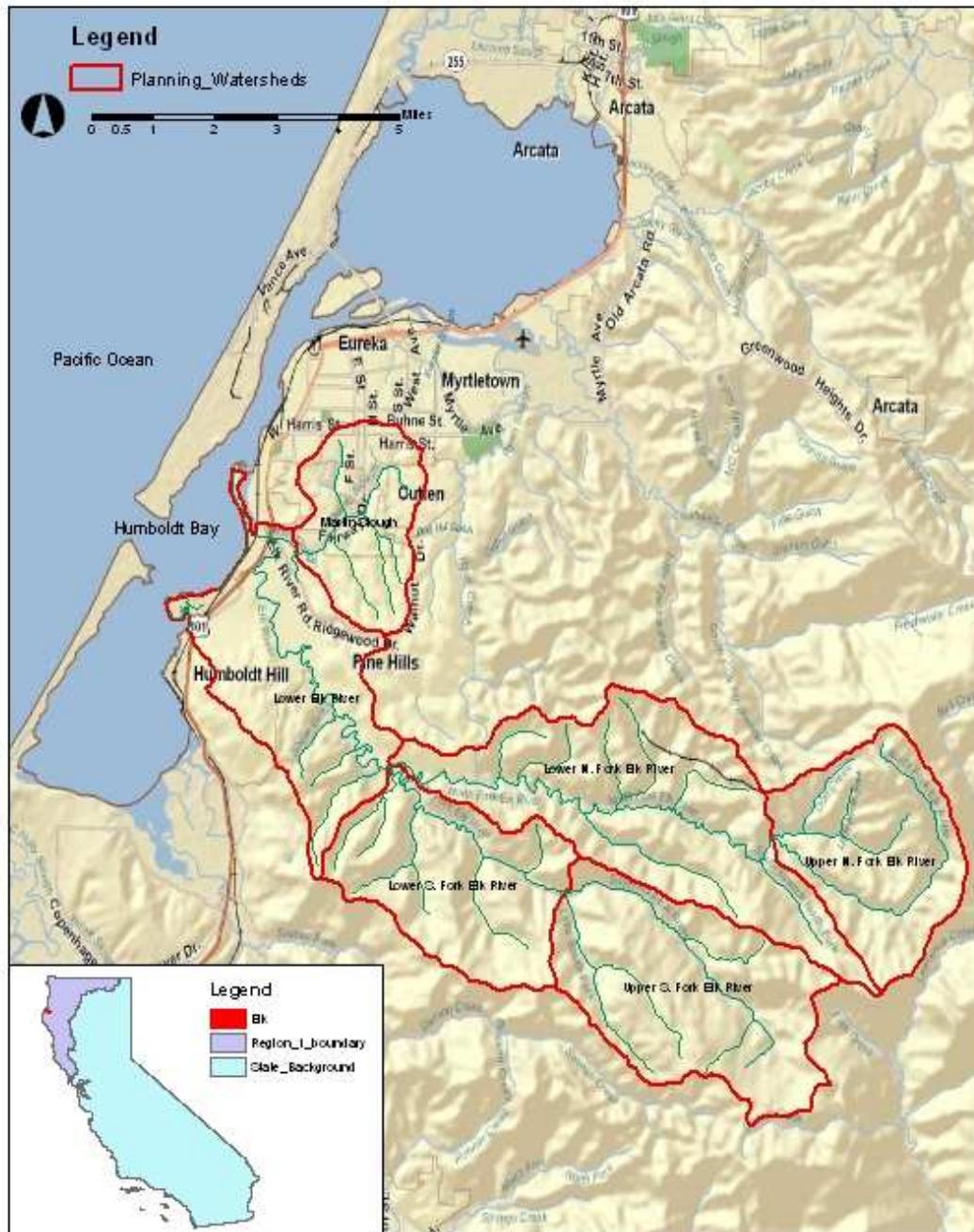
- Introductions
- Staff Presentation 6:15-6:45
- Questions 6:45-7:00
- Break 7:00-7:15
- Discussion 7:15-7:45
- Wrap-up 7:45-8:00



Presentation Overview

- Background on Regional Water Board Efforts in Elk River
- Geographic Scope of TMDL Analysis and Implementation Strategy
- Watershed Overview (Ch1)
- Impairment Overview (Ch2)
- Upper Elk River Source Analysis (Ch3)
- Next steps





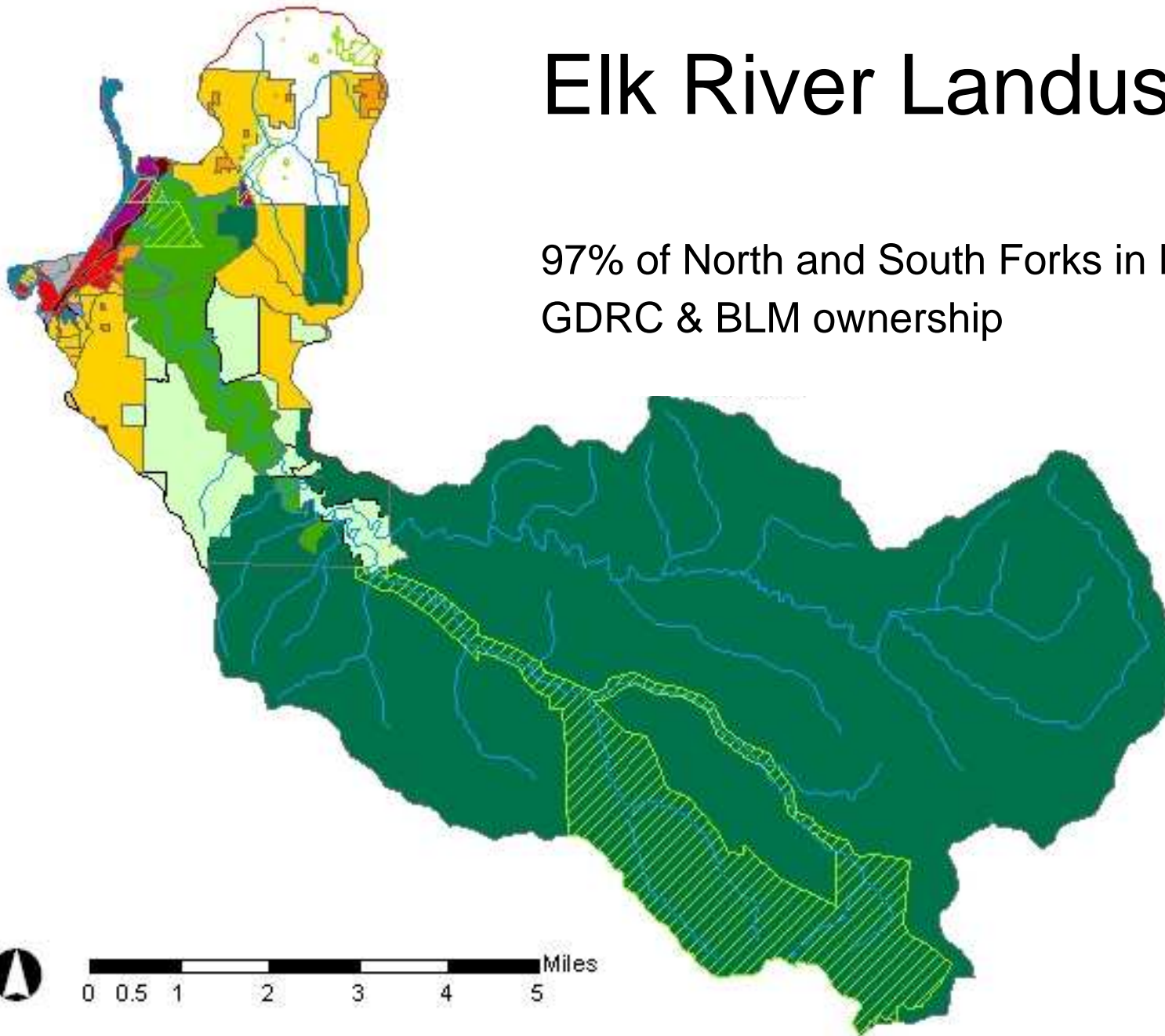
Elk River Watershed: 58.3 mi²

North Fork Elk River (22.5mi²)
 South Fork Elk River (19.5 mi²)
 Lower Elk River (10.4 mi²)
 Martin Slough (5.9 mi²)



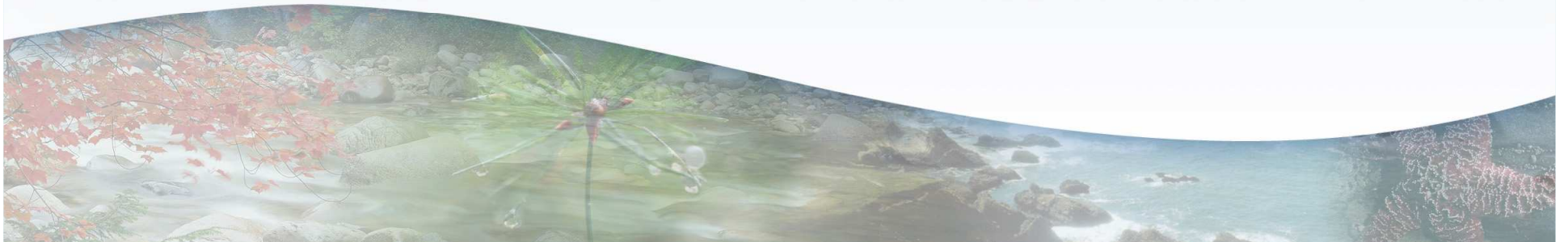
Elk River Landuse

97% of North and South Forks in HRC,
GDRC & BLM ownership



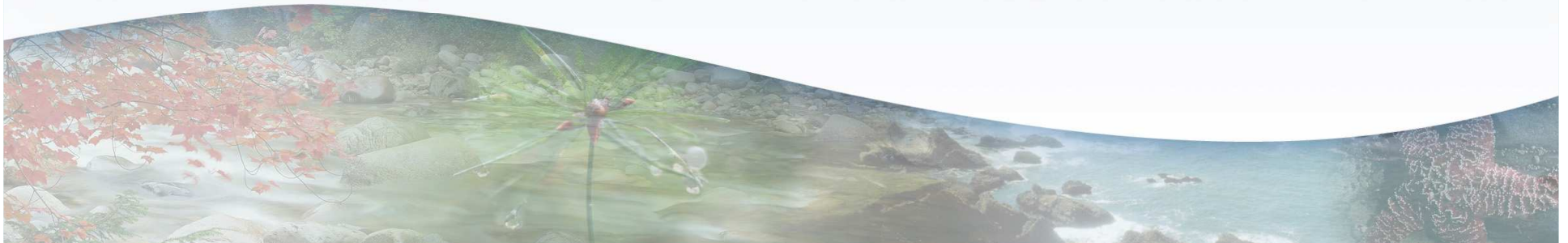
Data Availability

- Upper Elk River Forested Lands
 - Hillslope sediment source and instream data
 - Pursuant to Regional Water Board requirements
 - Ownership-management plan requirements
 - Grant-funded projects
- Lower Elk River and Martin Slough
 - Lack of hillslope and instream data



CEQA Scoping Comments

- Avoid the generalizations; rely on site-specific data.
- Upper and Lower Elk are very different; inappropriate to apply generalizations from upper watershed to lower watershed



Geographic Scope

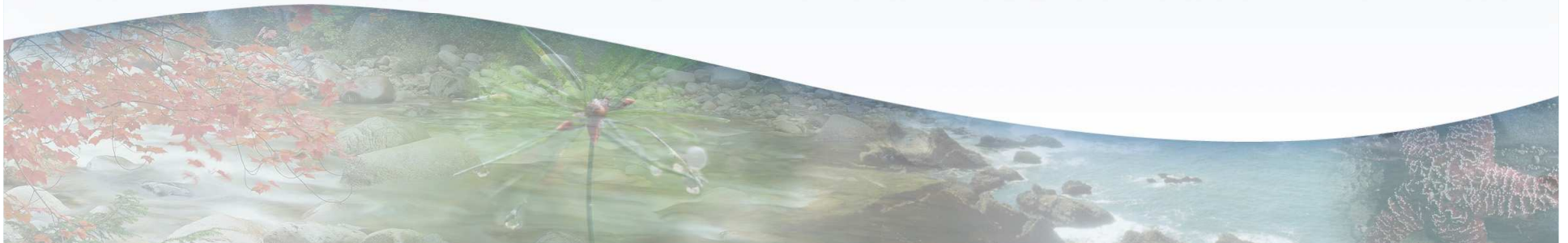
- Upper Elk River
 - TMDL technical analyses
(Source analysis and load allocations)
 - Implementation to reflect technical analyses;
address instream sediment deposits
- Lower Elk River and Martin Slough
 - Assessing options to address sediment
impairments
 - Reliance on existing regulatory programs



Elk River TMDL Draft Staff Report

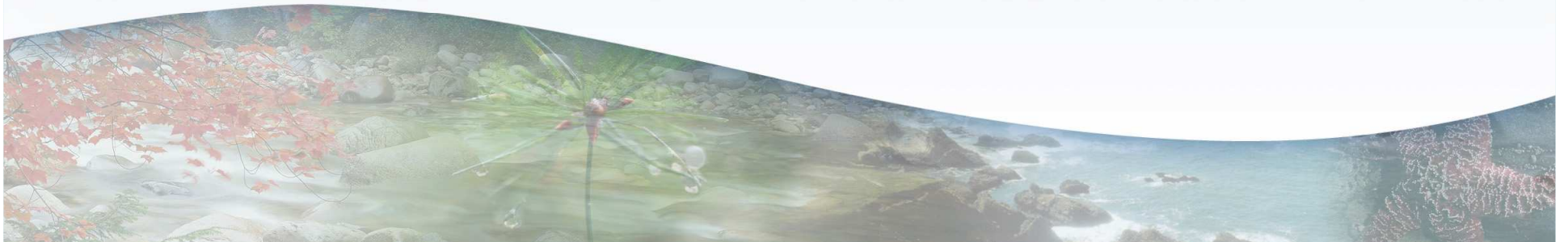
- Ch 1: Introduction – May 2009
- Ch2: Problem Statement – May 2009
- Implementation Framework – May 2009
- CEQA Scoping May 2009; Staff and Board workshops October/November 2009
- Ch 3: Upper Elk River Sediment Source Analysis – May 2011

www.waterboards.ca.gov/northcoast/water_issues/programs/tmdls/elk_river/



Chapter 1: Background

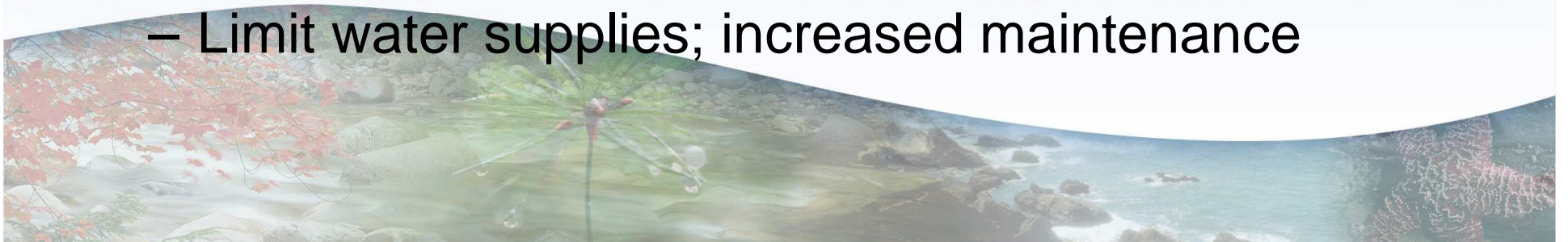
- Mid-1990's: Severe sedimentation documented from upper watershed
- Regional Water Board sediment control efforts begin
- 1998: Elk added to impaired waters list
- TMDL Development:
 - Technical Analyses
 - Implementation Program



Chapter 2: Problem Statement:

Beneficial Use Impairment & Exceedence of Water Quality Objectives

- Sediment deposition
 - Reduced channel capacity; altered morphology
 - Nuisance flooding conditions
 - Pool filling; spawning habitat
- Elevated suspended sediment concentrations and turbidity levels
 - Limit fish feeding and survivability
 - Limit water supplies; increased maintenance



Upper Elk River Source Analysis

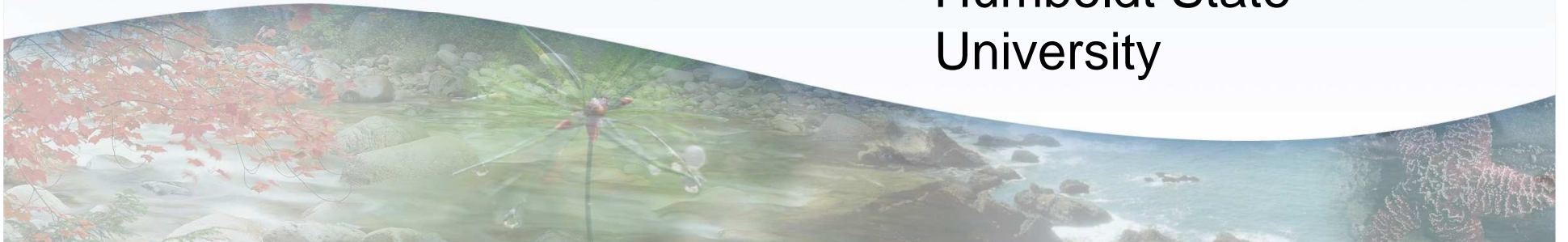
- Timing and magnitude of natural and management-related hillslope sediment sources
- Sub-basin analyses based on site specific data
- Reference and managed study sub-basins for generalized loadings where no site specific data available
- Time periods analyzed: 1955-1966, 1967-1974, 1975-1987, 1988-1997, 1998-2000, and 2001-2003.
 - Recent time period pending updated landslide inventories
 - Hillslope loads could be compared with SS loads



Upper Elk River Source Analysis

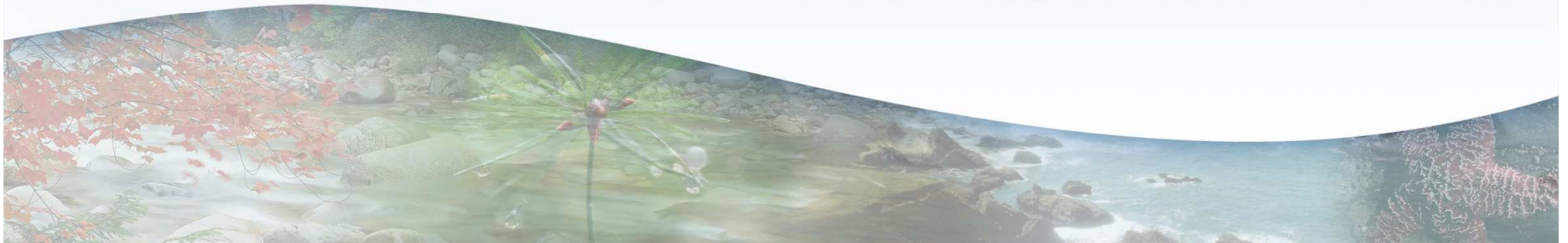
Data sources:

- Humboldt Redwood Company
- Pacific Lumber Company
- Green Diamond Resource Company
- Bureau of Land Management
- Pacific Watershed Associates
- Stillwater Sciences
- North Coast Regional Water Board
- Redwood Sciences Laboratory
- California Geologic Survey
- Salmon Forever
- Humboldt State University



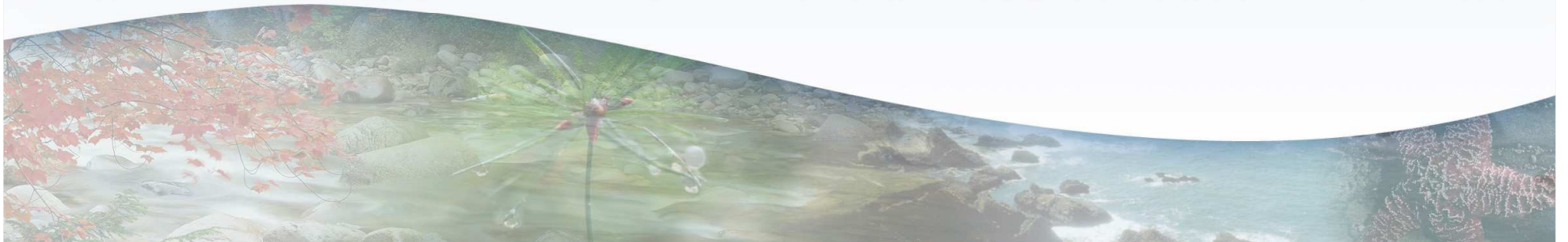
Upper Elk River Source Analysis Approach

- TMDL Drainage Network
 - Field-surveys of study sub-basins
 - Identified natural and managed drainage area thresholds for channel initiation.
 - Calculated natural and managed drainage network for analysis time periods.

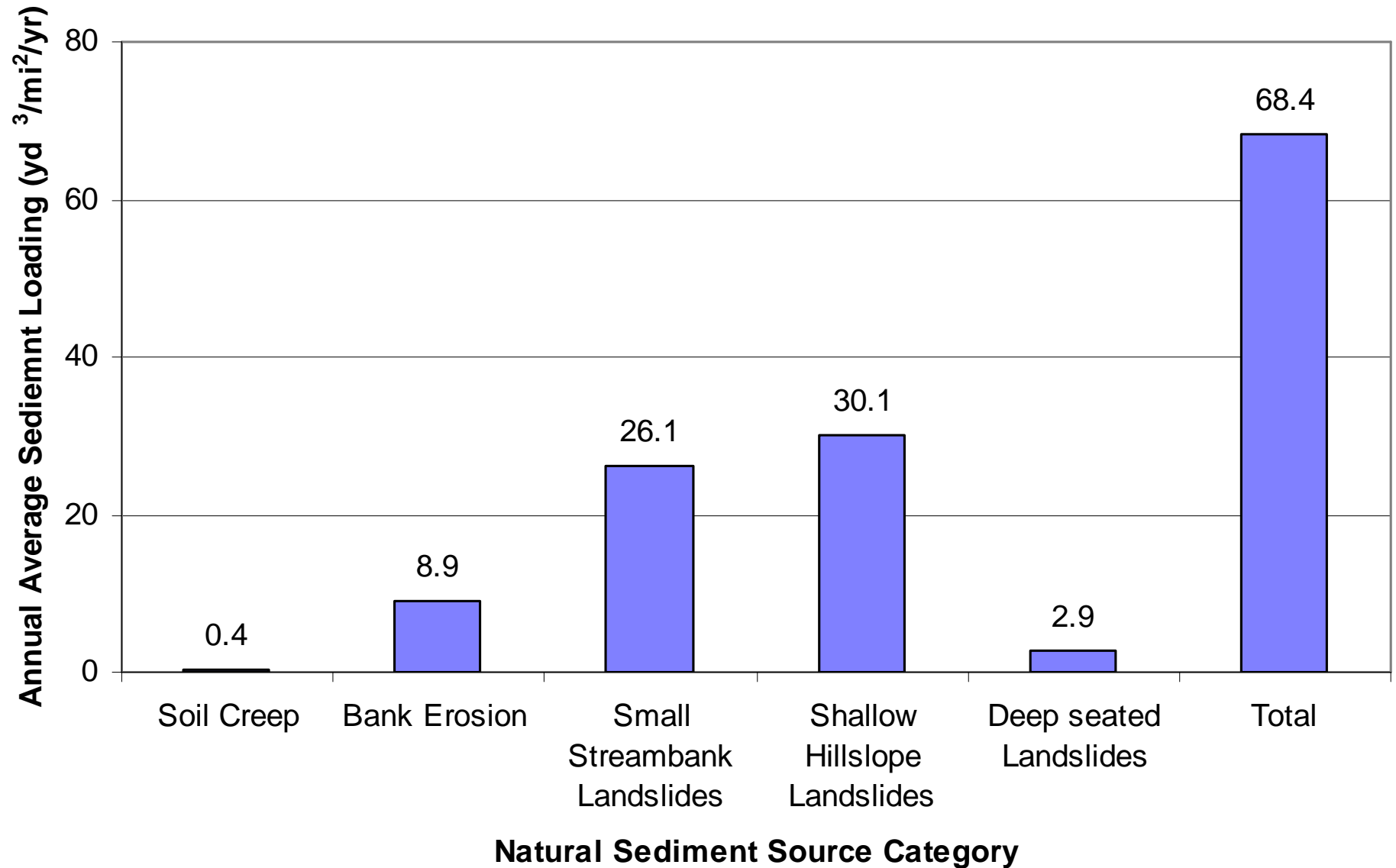


Source Analysis: Natural

	Sediment Source	Data Sources Relied Upon / Approach
Natural	Soil Creep	Literature
	Bank Erosion	Field surveys; natural drainage density estimate
	Small Streambank Landslides	Field surveys; natural drainage density estimate
	Shallow Hillslope Landslides	Areas not harvested in past 15 years
	Deep seated Landslides	CGS mapped active features; Palco WA rates



Natural Sources Summary



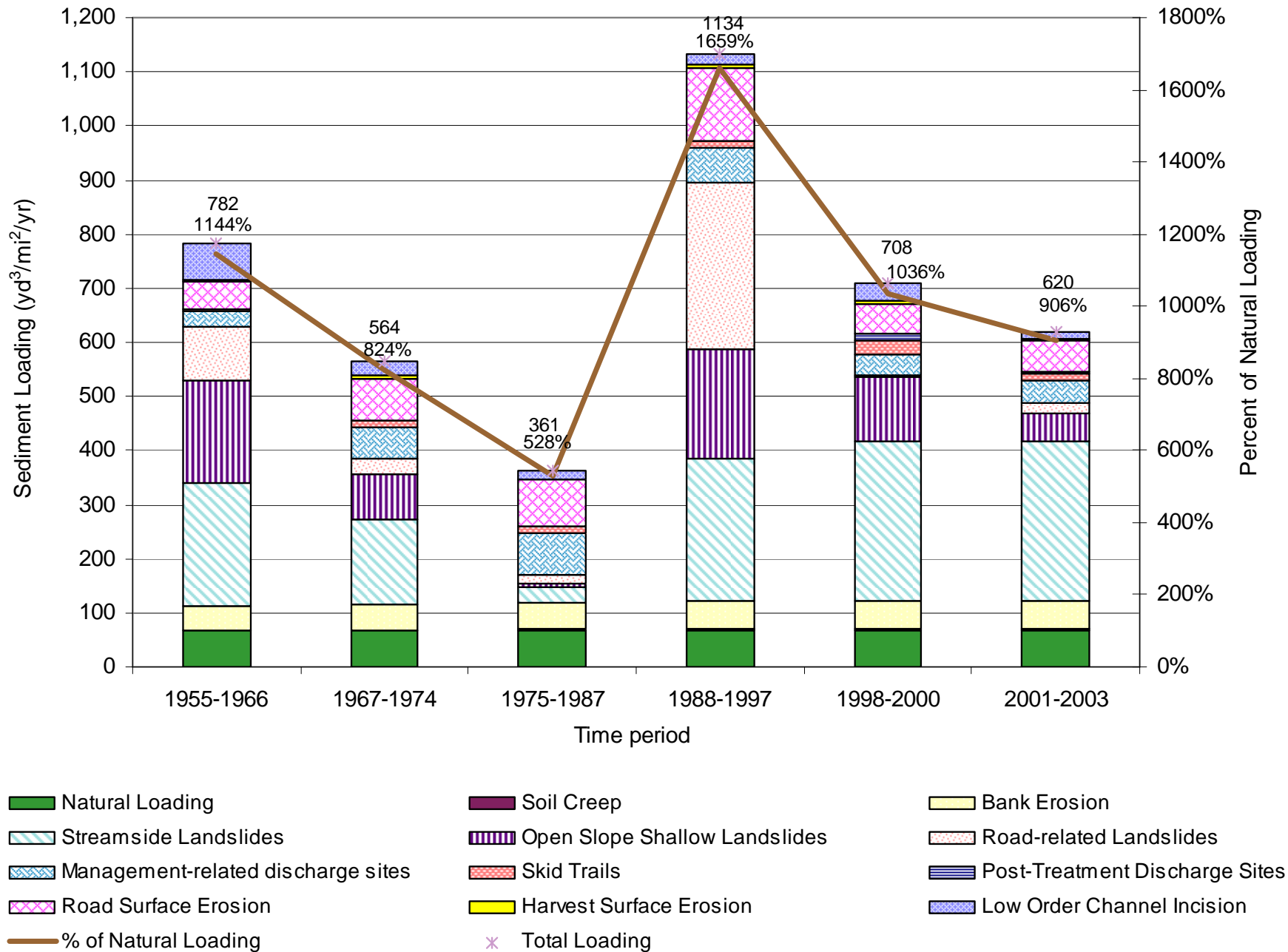
Source Analysis: Management

	Sediment Source	Data Sources Relied Upon / Approach
Management	Low Order Channel Incision	Field-based estimates of managed and natural drainage density; assumed 75% occurred in 1950's and 5% in each subsequent decade
	Management-Related Soil Creep	Soil creep to management-induce channel network
	Management-Related Bank Erosion	Field surveys in managed study sub-basins; managed drainage density estimate; subtracted natural loading
	Management-Related Open Slope Shallow Landslides	Sub-basin specific landslide inventory data from Palco WA and 2005 ROWD; non-road-related slides, includes some skid-related slides
	Road-related Landslides	Sub-basin specific landslide inventory data from Palco WA and 2005 ROWD

Source Analysis: Management

	Sediment Source	Data Sources Relied Upon / Approach
Management	Management-Related Streamside Landslides	Field surveys in managed sub-basins in Freshwater Creek; applied to natural drainage density estimate assuming bank erosion captured features in management-induced network; subtracted natural loading
	Management-Related Discharge Sites	Sub-basin specific site inventories from Palco WA, HRC CAO reports, GDRC WDR reports, BLM reports
	Post-Treatment Discharge Sites	Compiled monitoring results from BLM, HRC, and GDRC from sites treated in Elk River.
	Skid Trails	Compiled findings from Elk River skid-related inventories on BLM and HRC lands to estimate loading from skid sties not included in Management Discharge Site inventories
	Road surface erosion	Sub-basin road densities & surface condition based on Palco WA and ROWD; unit loading based upon Palco ROWD
	Harvest surface erosion	Estimated harvest history in clear-cut equivalents based upon CDF, Palco WA, and Palco ROWD; unit loading based upon Palco WA

Management Sources Summary

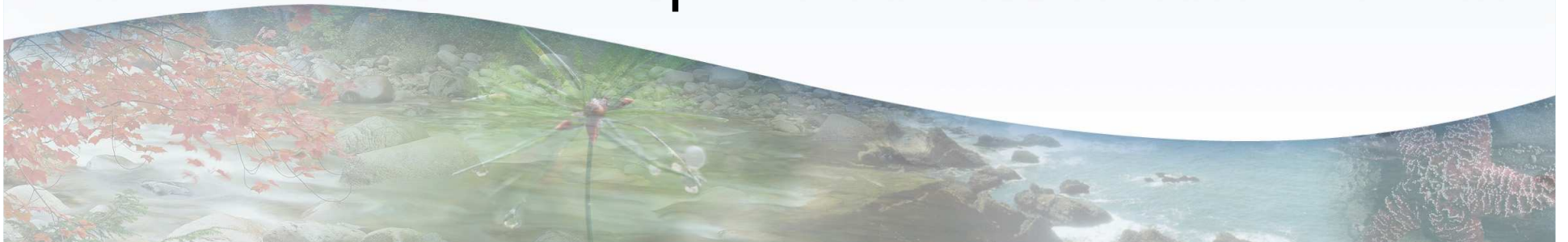


Comparison with Palco Watershed Analysis

	TMDL		Palco WA	
	Source Category	1988-2000 (yd ³ /mi ² /yr)	Source Category	1988-2000 (yd ³ /mi ² /yr)
Natural	Soil Creep	0.44	Soil Creep	52
	Bank Erosion	9	Bank Erosion	38
	Shallow Landslides	26	Shallow Landslides	68
	Streamside Landslides	30	Streamside Landslides	276
	Deep Seated Landslides	0	Deep Seated Landslides	3
	Natural Total	66	Natural Total	437
Management	Low Order Channel Headward Incision	24		
	Soil Creep	1		
	Bank Erosion	52	Bank Erosion	38
	Streamside Landslides	272	Road-related Streamside Landslides	162
	Open-slope Shallow Landslides	182	Open-slope Shallow Landslides	144
	Road-related Shallow Landslides	237	Road-related Shallow Landslides	168
	Discharge sites	59	Gullies	28
	Skid Trails	15		
	Post-Treatment Discharge Sites	3		
	Road surface erosion	118	Road surface erosion	32
	Harvest Surface Erosion	5	Surface Erosion	6
	Management Total	967	Management Total	579
	Total Loading	1,033	Total Loading	1,016
	Percent over Natural Loading	1,576%	Percent over Natural Loading	232%

Next Steps: Upper Elk River

- Public Comment
- Revise Chapters 1-3
- Targets
- Linkage
- Load Allocations
- Implementation Program
- Board Workshop and direction



**For further information, and to
download TMDL documents for
review and comment:**

**[http://www.waterboards.ca.gov/northcoast/
programs/tmdl/elk](http://www.waterboards.ca.gov/northcoast/programs/tmdl/elk)**

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